What IS CLAIMED IS:

1. A method for analyzing fail bit maps comprising:

inputting positions of failures in wafers;

preparing sections on the wafers;

calculating feature amounts configured to represent distributions of the failures in the wafers for each of the sections by at least one numerical value;

calculating a first numerical value configured to represent a degree of similarity between the feature amounts of the wafers; and

detecting another wafer having the first numerical value greater than a predetermined first threshold for each of the wafers, and forming similar wafer groups of the wafers having the distributions of the failures similar to each other.

2. The method as claimed in claim 1, further comprising:

finding another similar wafer group having a first ratio of the number of the wafers included in both of said another similar wafer group and each one of the similar wafer groups to the number of the wafers included in at least one of said another similar wafer group and the each one of the similar wafer groups to be equal to or greater than a predetermined second threshold; and

configuring a first failure category from the similar wafer groups and another similar wafer group found for the each one of the similar wafer groups in decreasing order of the number of the wafers included in the similar wafer groups.

3. The method as claimed in claim 2, further comprising:

determining the first failure category to which each of the wafers

belong.

4. The method as claimed in claim 2, further comprising:

identifying at least one of a manufacturing step and a manufacturing device configured to be commonly used to manufacture the wafers belonging to the first failure category from a process history.

5. The method as claimed in claim 1, wherein calculating the feature amounts includes calculating a failure existing rate as a ratio of the number of the failures developed within each of the sections to the number of all of the failures.

6. The method as claimed in claim 1, wherein calculating the feature amounts includes calculating a first autocorrelation function with an exposure cycle period as a lag for each of the sections.

7. The method as claimed in claim 1, wherein calculating the feature amounts is by expanding the sections and calculating the feature amounts by using the number of the failures developed in the sections.

8. The method as claimed in claim 1, further comprising:

generating frequency distributions of the feature amounts for each of the wafers, approximating logarithms of the frequency distributions with quadratic functions, finding second-order coefficients and first-order coefficients of the quadratic functions, and determining whether there are clustering failures based on the second-order coefficients and the first-order coefficients.

9. The method as claimed in claim 1, further comprising:

storing an alignment order for the feature amounts and a lag width;

aligning the feature amounts as waveforms based on the alignment order for each of the wafers; and

calculating second autocorrelation coefficients of the waveforms based on the lag width.

10. The method as claimed in claim 2, further comprising:

setting a second ratio of the number of the wafers belonging to the first failure category and having the first numerical value equal to or greater than the first threshold to the number of the wafers belonging to the first failure category, and setting a zero value when each of the wafers fail to belong to the first failure category, to each of the wafers as representative lot values of lots configured with the wafers;

calculating a second numerical value configured to represent the degree of similarity between the representative lot values of the lots ; and

detecting another lot having the second numerical value greater than a predetermined third threshold for each of the lots, and forming similar lot sets of the lots having development tendencies of the failures similar to each other.

11. The method as claimed in claim 10, further comprising:

finding another similar lot set, which allows a third ratio of the number of the lots included in both of said another similar lot set and one of the similar lot sets to a number of the lots included in at least one of said another similar lot set and one of the similar lot sets to be equal to or greater than a predetermined fourth threshold;

configuring a second failure category from the similar lot sets and the another similar lot set, which is found for the similar lot sets, in decreasing order of the number of the lots included in the similar lot sets; and

determining a representative lot value that is most characteristic in the second failure category.

12. The method as claimed in claim 10, further comprising:

aligning the representative lot values for each of the lots in one of a decreasing and increasing order of the representative lot values, so as to form a reference waveform; and

calculating a residual sum of squares between a waveform, which is formed by aligning the representative lot values of other lots in the decreasing or increasing order, and the reference waveform.

13. The method as claimed in claim 1, wherein calculating the first numerical value includes at least one of

calculating the first correlation coefficient between the feature amounts of the wafers,

performing Fourier transformation regarding the feature amounts as waveforms and comparing first spectra of Fouriertransformation of the waveforms, and

using a maximum entropy method.

14. The method as claimed in claim 7, wherein a overlapped area of the sections expanded and the sections adjacent to the sections expanded occupies 60% or less of an area of the sections.

15. The method as claimed in claim 10, wherein setting as the representative lot values uses one of average lot values, a wafer failure rate per lot, the intra-lot maximum value, degree of even / odd-caused inhomogeneous distribution, degree of first / latter half-caused inhomogeneous distribution, degree of wafer number-caused inhomogeneous distribution, or a periodic regularity, for the second ratio.

16. The method as claimed in claim 11, wherein determining the representative lot value includes:

finding a first total sum of the second numerical values of the representative lot values of the lots belonging to the second failure category and a second total sum of the second numerical values when a single component is excluded from the representative lot values; and

finding a component, which allows the difference between the first total sum and the second total sum to be largest.

17. An apparatus for analyzing fail bit maps, comprising:

an input / output unit configured to input positions of failures in wafers;

a partitioning unit configured to prepare sections on the wafers;

a generalized feature amount calculation unit configured to calculate feature amounts configured to represent distributions of the failures in the wafers for each of the sections by at least one numerical value;

an inter-wafer correlation coefficient calculation unit configured to calculate a first numerical value configured to represent the degree of similarity between the feature amounts of the wafers; and

a similar wafer group generation unit configured to detect another wafer having the first numerical value greater than a predetermined first threshold for each of the wafers, and forming similar wafer groups of the wafers having the distributions of the failures similar to each other.

18. The apparatus as claimed in claim 17, further comprising:

a similarity calculation unit configured to find another similar wafer group having a first ratio of the number of the wafers included in both of said another similar wafer group and each one of the similar wafer groups to the number of the wafers included in at least one of said another similar wafer group and each the one of the similar wafer groups to be equal to or greater

than a predetermined second threshold; and

a failure category generation unit configured to implement a first failure category from the similar wafer groups and another similar wafer group found for each the one of the similar wafer groups in decreasing order of the number of the wafers included in the similar wafer groups.

19. A computer program product for analyzing fail bit maps, the computer program product comprising:

instructions for inputting positions of failures in wafers;

instructions for preparing sections on the wafers;

instructions for calculating feature amounts configured to represent distributions of the failures in the wafers for each of the sections by at least one numerical value;

instructions for calculating a first numerical value configured to represent a degree of similarity between the feature amounts of the wafers; and

instructions for detecting another wafer having the first numerical value greater than a predetermined first threshold for each of the wafers, and forming similar wafer groups of the wafers having the distributions of the failures similar to each other.

20. The computer program product of claim 19, further comprising:

instructions for finding another similar wafer group having a first ratio of the number of the wafers included in both of said another similar wafer group and each one of the similar wafer groups to the number of the wafers included in at least one of said another similar wafer group and the each one of the similar wafer groups to be equal to or greater than a predetermined second threshold; and

instructions for configuring a first failure category from the similar wafer groups and another similar wafer group found for the each one of the similar wafer groups in decreasing order of the number of the wafers included in the similar wafer groups.

5